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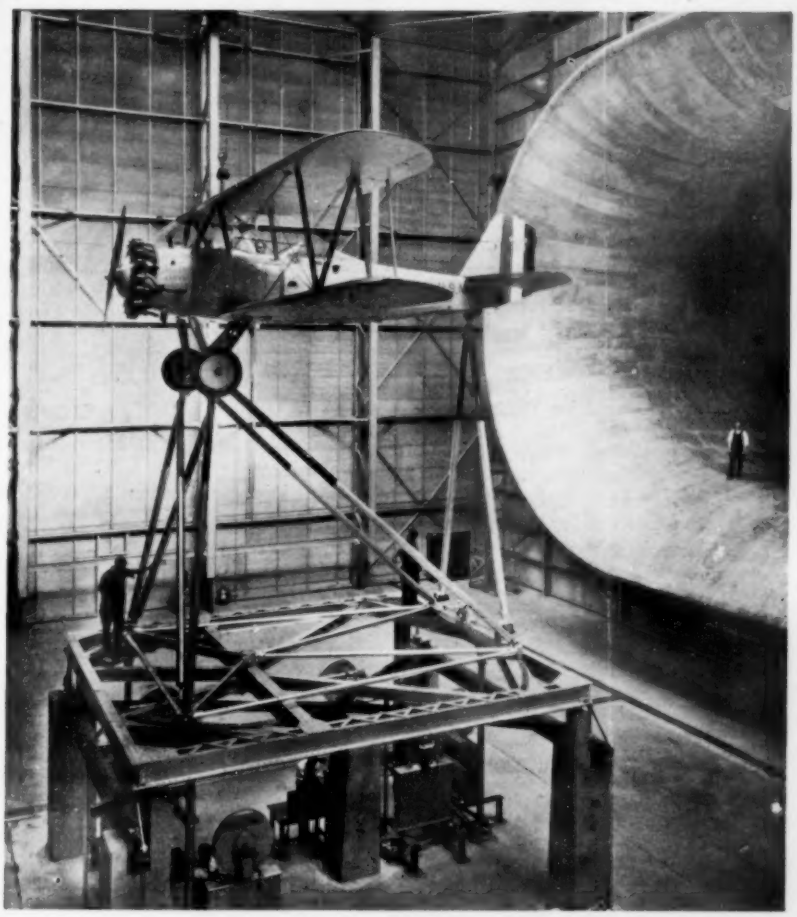
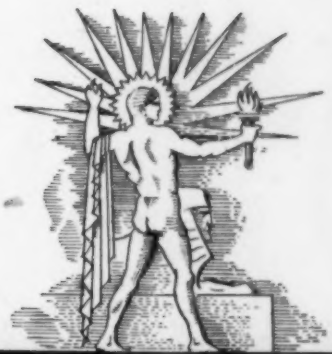
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •





JUNE 6, 1931

115 Miles Per Hour at a Standstill

See page 355

A SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

VOL. XIX *No. 530*

The Weekly Summary of Current Science

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The Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

Edited by WATSON DAVIS

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DO YOU KNOW THAT

A tooth is the only part of the body that cannot repair itself.

The United States is carrying almost $1,000 per capita of life insurance.

At a fisheries research station in Scotland a study of fish livers is being made to determine medicinal value of the oils.

Carpet beetles do not restrict their damage to carpets but are known to devour fur, feathers, and wool garments.

A Chicago physician estimates that from 30,000 to 40,000 residents of that city are attacked by hay fever each summer.

"No tooth paste or mouth wash can cure pyorrhea," declares Dr. J. J. Durrett, chief of drug control of the Food and Drug Administration, adding that the disease centers deep in the gums, where gargles, washes, sprays, and other surface treatments cannot penetrate.

The largest of modern fishes is the whale shark.

Traffic deaths in the United States last year increased 5 per cent. over 1929.

A dog's normal temperature is several degrees higher than a man's.

Light as leaves are, the blanket of leaves laid in one year in the forest may weigh more than a ton per acre.

The Florida wolf is now extinct, and not even a stuffed museum specimen is to be found within the State.

A new process for making starch from sweet potato culls, of great importance to the agricultural South, has been found by the U. S. Department of Agriculture.

Harmless snakes have solid teeth; whereas poisonous snakes have several hollow fangs linked with a poison gland.

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Science Service presents over the radio, an address

CAN POVERTY BE ABOLISHED?

By Dr. Dexter S. Kimball, Dean of the College of Engineering of Cornell University, who is an authority in the field of industrial education and organization.

Friday, June 12, at 2:45 P. M., Eastern Standard Time

Over Stations of

The Columbia Broadcasting System

AERONAUTICS

Largest Wind Tunnel and Towing Channel Finished

New Aircraft Testing Apparatus at Advisory Committee Laboratory Expected to Yield Valuable Information

See Front Cover

AERONAUTIC research took a stride forward when two outstanding pieces of apparatus for testing and improving aircraft—both the largest of their kind in the world—were officially put in operation last week by the National Advisory Committee for Aeronautics at its Langley Memorial Aeronautical Laboratory, Langley Field, Va.

One is a wind tunnel big enough to hold full-sized airplanes between its yawning jaws. The other a seaplane towing channel nearly half a mile long through which a model of a boat hull can be pulled as fast as a mile a minute.

Greater safety while flying and improvements to all forms of aircraft may be expected from experiments and tests that will be conducted with these two new tools of research.

The wind tunnel makes it possible to send a continuous stream of air past full-sized planes at a speed of 115 miles per hour. The jaws, or openings from which the air comes, are thirty feet high and sixty feet wide. The air is driven by two huge propellers out of one jaw, across an open space where the airplane being tested is rigged up and into the other jaw, whence it is sucked into the propellers and sent around the same course again.

Full-Sized Accuracy

It is much more satisfactory to measure the forces on full-sized airplanes, as can be done in this tunnel, than to test small scale models in tunnels that operate under pressure, which has been necessary to a large extent in the past. With the full-sized ship on test there is no chance of getting wrong results because of the reduction in the size of the plane. Exactly the same things happen as if the airplane were actually flying; the difference is that the plane is still and air is moving by it.

Another method which has been used to test models of wings or other airplane parts consists in carrying the part to be tested beneath an airplane in flight with instruments attached to measure its behavior in the atmosphere through which it is rushing.

The seaplane towing channel is in reality a long narrow lake built to exact dimensions—2,050 feet in length, 24 feet wide and 12 feet deep.

Steel Rails For Carriage

Two steel rails run its entire length over which the towing carriage is driven. The carriage is operated by electric motors on power supplied from an overhead trolley and is capable of a speed of 60 miles an hour. Huge pneumatic rubber tires make it run quietly and smoothly.

The model to be tested is suspended beneath the carriage so that gauges and measuring devices can be readily attached. There is a small area of shallow water at each end of the channel in which the model can be easily attached to the carriage and its position in the water properly adjusted.

The towing channel was designed and its construction was directed by Starr Truscott. Mr. Truscott will be the engineer in charge of the channel when tests are made.

The wind tunnel and the towing channel were formally placed in operation at the Aircraft Engineering Research Conference between executives and engineers of the aviation industry and members of the National Advisory Committee for Aeronautics.

The channel was dedicated by Admiral David W. Taylor, U. S. N., retired, vice-chairman of the National Advisory Committee, who is known for his outstanding achievements in marine architecture. Admiral Taylor was given the John Fitz Medal for 1931, the highest award of the American engineering profession. Dr. Joseph S. Ames, chairman of the Committee and president of Johns Hopkins University, placed the wind tunnel in operation.

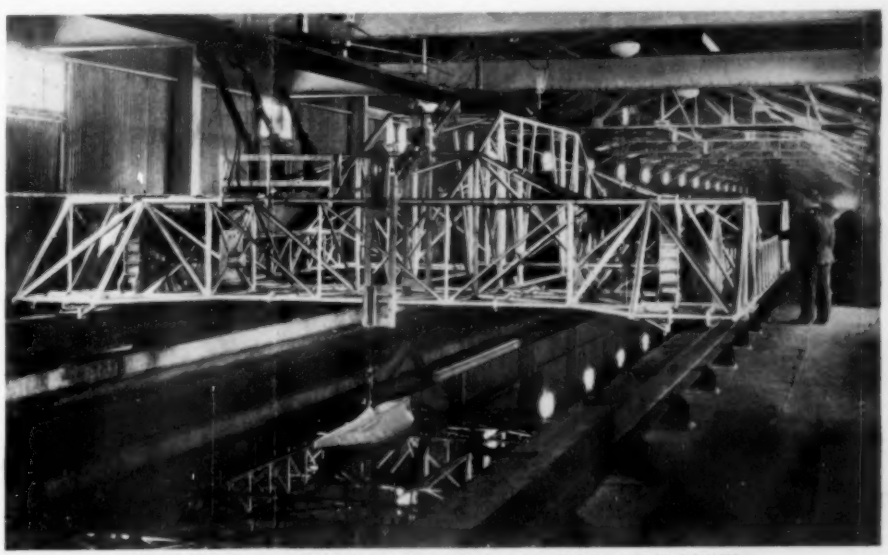
Science News Letter, June 6, 1931

PHYSICS

Rumford Medal Awarded Dr. Karl T. Compton

PRESIDENT Karl T. Compton of the Massachusetts Institute of Technology has been awarded the Rumford medal by the American Academy of Arts and Sciences, Cambridge, in recognition of his researches upon electrons and light waves. The fund providing the medal was established in 1796 by Benjamin Thompson, native of Massachusetts, the physicist who later founded the Royal Institution of Great Britain and became Count Rumford of the Holy Roman Empire.

Science News Letter, June 6, 1931



HALF MILE LONG SEAPLANE TOWING CHANNEL

Where models of seaplane hulls will be pulled through the water at 60 miles an hour so that they can be designed to offer least resistance. The new wind tunnel carrying a full-sized Navy observation plane on its mount is illustrated on the front cover.

MEDICINE

Research Shows Diet is Not Responsible for Cancer

In Study Conducted by British Scientist Development of Cancer in Mice is Unaffected by Five Different Diets

DIET IS not responsible for the development of cancer, it appears from experiments reported by Sir Leonard Hill to the British medical publication, *Lancet*. Sir Leonard described his studies of mice on different diets and different beddings, which he conducted in the National Institute for Medical Research.

"Cancers have occurred indifferently in mice on all diets and on all beddings," he reported. "The significant influence has been age."

The mice were kept on five different diets as follows: an approximately natural diet for wild mice, consisting of barley, oats, wheat and fresh green food; a canteen lunch diet of cooked meat, vegetables with the usual amount of common salt, pudding and canned fruit; a canteen tea diet poor in vitamins, consisting of white bread, margarin, rock cakes and biscuits; a diet found to be the average one of Essex farm laborers, low in protein value; and the same diet of which a third had been browned by frying, in order to see whether cancer-producing products were produced in food by such burning. Some of the stocks of mice were fasted two days each week to determine whether abstinence had any effect on cancer-production.

Size and Productivity Changed

While some of the diets had an effect on the size of the mice and their reproductive ability, there was no effect on the development of cancers.

Cancers occurred spontaneously in the mice; two-fifths of these tumors occurring in mice dying between the ages of one and one-half and two years. Three years in a mouse corresponds to very old age in a man, Sir Leonard pointed out. About one-third of the cancers occurred in mice dying between two and two and one-half years.

Besides reporting his investigations on mice, Sir Leonard recounted observations on the relation of cancer and diet made by other investigators. In this connection he quoted a report of the Imperial Cancer Research Laboratory as follows:

"There is no reliable evidence, experimental, statistical or clinical, which would indicate a causal correlation between cancer and the absence, or the presence, or the excess of any particular dietetic constituent. Sensational statements to the contrary are unfounded and ill-considered, and only serve to alarm the public."

Science News Letter, June 6, 1931

GEOPHYSICS

Height of Northern Lights Measured by Photographs

THE AURORA BOREALIS, least understood of heavenly phenomena, is not so distant from the earth as has previously been thought. Fifty to seventy-five miles from the ground is the height fixed for the eerie flashes of light in a report made to the Royal Society of Canada at its recent meeting by Prof. J. C. McLennan, Dr. Hugh Wynne-Roberts and Dr. H. J. C. Ireton of the physics department of the University of Toronto.

Utilizing the fact that the northern lights are visible farther south in eastern Canada than anywhere else in the northern hemisphere, the physicists photographed displays last January and February. They set up two observing stations near James Bay. One was located at Blacksmith Rapids, 50 miles from Moose Factory, and the other at Coral Rapids, 30 miles farther south. The stations were connected by telephone lines and each was provided with cameras similar to those used in aerial surveying.

When the aurora was visible from both stations, the photographers focussed their cameras on areas of the sky selected by telephone, and took simultaneous pictures. The exact times were compared by telephone and checked against a master clock. Reference points in the heavens were provided by the stars, photographed on the plates at the same time. When the plates were developed, the heights of shafts of light recorded at both places were calculated by the same triangulation methods used in surveying. In this case, instead of a horizontal triangle, the physicists computed a vertical triangle with one side as the line joining the observing stations.

The results show that the auroral flashes may occasionally lie 155 miles over the earth. Less than 100 miles is the usual height, however. This result agrees with similar measurements obtained in Scandinavia.

Science News Letter, June 6, 1931

ONLY FROM 50 TO 75 MILES ABOVE THE GROUND

This is the height of the Aurora Borealis as determined by a combination of photography and a method of triangulation similar to that used in surveying. Prof. Carl Stormer at Oslo, Norway, took this striking photograph of the least understood of heavenly phenomena.

ENTOMOLOGY

No Need for Alarm Over Seventeen-Year "Locust"

Insects, Which Are Not Really Locusts, Seldom Cause Serious Damage and War Against Them Would Be Wrong

NO ALARM need be felt over the advent of the seventeen-year "locust" brood of 1931, scheduled to appear in vast hordes early in June in the region centering about the eastern two-thirds of Ohio and comprising portions of Pennsylvania, West Virginia, one or two points in Virginia and the northeastern corner of Kentucky, U. S. Department of Agriculture entomologists announce.

Wrongly confused with the grasshopper plague of Egypt, the seventeen-year "locust" is really a cicada and an almost harmless relative of the harvest fly though it appears formidable because of the noise it makes and the great numbers in which it sometimes appears.

Indeed, the crop danger is confined almost entirely to very young plants, such as nursery trees, and the damage done, even by a record brood, is slight.

For this reason attempts to exterminate the seventeen-year "locust" are uncalled for and it would actually be a shame if the species were destroyed, is the opinion of J. A. Hyslop, entomologist in charge of Insect Pest Survey of the Bureau of Entomology.

Living for seventeen years underground and hatching almost to the day, year in and year out, whether the season is warm, cold, wet or dry, the seventeen-year "locust" is a biological curiosity which should be preserved for the interest of future generations.

Study of these strange insects has already held the interest of scientists for about a century and they are able to forecast with a high degree of certainty the size and distribution of the brood which is due to appear by the history of the "locust" crop of 1914.

This year's seventeen-year "locust" crop is designated as brood five in the series of seventeen annual hatchings which occur in rotation. Not so large as Brood 10, the brood of 1931 is, nevertheless, very numerous and well defined in the regions where it occurs. Its advent has been heralded by the appearance of numerous small holes in the ground, from which the locust emerges from its Rip Van Winkle-like rest.

Always appearing about the end of May, the seventeen-year "locust" persists through June and disappears by the Fourth of July. During the four or five weeks of their life above ground, the insects feed very seldom or not at all, depending on the reserves accumulated during their long underground life. Damage may be caused, however, when the females deposit their eggs in furrows cut into the green bark of young twigs. This causes a temporary defoliation of many trees, but no permanent harm in the forests. It does at times cause damage, however, in orchards and nurseries.

Science News Letter, June 6, 1931

AFTER SEVENTEEN YEARS

The Cicada, misnamed "Locust", makes his way toward the surface, to shed his outworn swaddling-clothes, flit his few brief days in the sun, mate and die.

PHYSIOLOGY

Tooth Enamel Consists Of Apatite Crystals

APATITE, appropriately enough, is one of the constituents of teeth, it appears from a report of the Superintendent of the Physics Department of the National Physics Laboratory, London. In normal teeth, the enamel consists of apatite crystals together with a second crystalline substance, at present unidentified, the report states. The National Physics Laboratory has been making a preliminary study of the crystal structure of teeth at the request of the Dental Research Board.

Apatite is not an emotion but a mineral. It is made up of calcium, fluorine and phosphorus, and occurs in various-colored six-sided crystals.

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PHYSICS

Hundred Per Cent Efficient Light Produced in Laboratory

AN ELECTRIC lamp converting current into light completely without producing heat has been operated in a laboratory experiment by Dr. M. Pirani, director of the Society for the Study of Electric Lighting at Berlin. The new tube is not suitable, however, for domestic or industrial lighting.

The invention of a light that would avoid wasting 80 to 90 per cent. of the current as heat has been the goal of physicists and engineers for years. Dr. Pirani's new light, however, is actually heated by a furnace on the outside.

The tube is a modification of the gas discharge tubes used by neon lights in advertising and recently brought to a 30 per cent. efficiency by Dr. Pirani. He now finds that if the losses due to the higher temperature of the discharge tube are taken care of by a separate source of energy, that a completely heatless conversion of electricity into light energy is obtained. The current is carried by sodium vapor at low pressure and is bright yellow in color. The discovery is only of theoretical value now.

Science News Letter, June 6, 1931

Acme

MEDICINE

Protecting Babies from Tuberculosis

Children of Tuberculous Parents are Saved from the Disease By Injections of Live or Dead Germs Into Their Bodies

By JANE STAFFORD

PROF. ALFRED CALMETTE of the Pasteur Institute, Paris, and his disciples throughout France are feeding live tuberculosis germs to day-old babies to give them immunity to tuberculosis.

In Baltimore, at the Harriet Lane Home of the Johns Hopkins Hospital, vaccination with killed tuberculosis germs is being practiced on a specially selected group of babies to increase their resistance to the great white plague.

Which method is best? Scientists disagree on this, and not gently.

Most dramatic, perhaps, is the method of the Frenchman; daring, as befits its war background, and successful, its friends claim.

The latest is the method developed and now being tried by conservative American scientists. The Baltimore institution is the first in this country, so far as is known, to start vaccination of babies with heat-killed tuberculosis organisms.

Both methods are directed especially toward those unfortunate infants who are born of tuberculous parents. Babies do not inherit the disease, but they have no resistance to it during the first few days of their life. If they are constantly exposed to it, every time their mothers feed and tend them or every time their fathers kiss them, they are almost certain to contract the disease. Such babies must be taken from their parents at birth and kept in foster homes or hospitals where there is no contact with tuberculosis, if they are to escape it. Gradually they will build up a resistance to the disease, just as children born of non-tuberculous parents do.

All of you have been exposed to tuberculosis at one time or another in your lives, but relatively few of you succumb. Tuberculosis germs, a few at a time, invade your bodies. Each of these invasions is resisted and overcome by the defensive forces of your body, and with each victory, these defensive forces grow a little stronger and your chances of succumbing to the tubercle bacilli and contracting the disease become a little less. Of course, if you are tired out, rundown, have had a long siege of illness or a severe operation, your body's defense is weakened, and if the tubercle bacilli select that time for an invasion, they are more likely to survive and grow. Then you may find yourself having tuberculosis.

Now if tubercle bacilli, a few at a time, are deliberately introduced into a new-born baby's body, it may hasten the development of the baby's defensive forces so that he will be able to withstand the invasions of quite large numbers of virulent TB germs to which he will be exposed if his parents or some member of his immediate family has the disease.

Weakened Germs Used

Prof. Calmette's method of immunizing babies to tuberculosis follows this line of reasoning. So does the recently developed method of American investigators. The trick is to use tuberculosis germs which cannot cause disease even in a baby's tender body and which at the same time are able to set up a defense reaction in the body leading to immunity or at least increased resistance.

For many years, ever since 1882 when Robert Koch discovered the tubercle bacillus, the germ which causes tuberculosis, scientists have been searching for a way to make a protective vaccine or dose of these bacilli. Koch himself tried and thought he had succeeded. Terrible was the disappointment when his method failed.

Prof. Calmette did not start out with the idea of immunizing babies to the white plague. He, along with scientists in other parts of the world, was busying himself with the problem of how animals got tuberculosis. Not such an impractical problem, since many tuberculosis cases in children develop from drinking milk of tuberculous cows. Working hard in his laboratory at Lille in northern France in the dark days of 1914, Prof. Calmette hardly knew there was a war being fought all around him. He was far more concerned with getting his germs to growing properly for his investigations than he was in the roar of the big guns. He had grown used to danger, scorned it. The minute organisms he worked with constantly in his laboratory had just as much danger packed into their tiny forms as any 16-inch shell.

Besides, he was making remarkable discoveries. In 1908 he had planted tubercle bacilli from cows on a new kind of culture medium made from ox bile, glycerine and potato. To his surprise, he found that these bacilli began to lose their virulence after growing for several generations on this medium. Exploring the possibilities of this discovery made him nearly oblivious to the war and other outside considerations.

By 1920 this strain of germs had lost its virulence for all species of animals; that is, it could be injected into guinea pigs, rabbits, cows and pigeons without causing the development of tuberculosis. Then Prof. Calmette made the startling statement that vaccination with this

strain—called *Bacillus Calmette-Guérin* after himself and his colleague who developed it—gave considerable if not complete immunity to tuberculosis as long as the organisms remained in the body of the vaccinated animal.

Patriotic French physicians seized on this announcement. Here was a way to restore France's man power, so badly depleted during the war. Babies were being born in France in goodly numbers but so many of them were dying before they reached their first birthdays. Many of these babies' mothers had tuberculosis, the result of undernourishment during their girlhood days of war and poverty. The babies were almost sure to get the disease. So French physicians began vaccinating babies and later even the midwives gave the B.C.G.—shorthand for *Bacillus Calmette-Guérin*—to babies of tuberculous parents.

Americans Skeptical

The news spread and created a sensation in the medical world. In some quarters the French scientists' discovery was acclaimed and put to immediate practical use. Elsewhere, chiefly in the United States, Canada, England and Germany, scientists were more skeptical, more cautious. It was risky business giving live tuberculosis germs, no matter how weakened, to day-old babies, they argued. More laboratory studies and more investigations with animals was the advice of the conservatives. Others, investigating Dr. Calmette's statistics and records were not entirely satisfied that these substantiated his claims for B.C.G.

High in the Adirondack mountains of New York State one of these conservatives, Dr. S. A. Petroff, has been investigating tuberculosis for years.

It is at this laboratory that the vaccine was developed which is being used to protect Baltimore babies from tuberculosis. A peculiarly fitting place for its development and production, if this vaccine should turn out to be the means of saving American babies from the white plague. For it was on this Adirondack hillside that Edward L. Trudeau founded his famous cottage sanitorium, first of its kind in the world, and it was here that he introduced onto the American continent open air treatment for the disease.

On this historic spot, Dr. Petroff and his associates of the Trudeau Research and Clinical Laboratories, hearing of Prof. Calmette's claims for B.C.G., started investigations of their own. But their studies, with a strain imported directly from the Pasteur Institute, increased their skepticism about B.C.G.

They had previously found that tubercle bacilli, like some other bacteria, changed their form when grown on different kinds of culture media. Dissociation, scientists call this change. In the course of dissociation, a strain of harmless bacilli may develop into two strains, one harmless and one dangerous. Dr. Petroff and associates were able to dissociate the B.C.G. strain, getting one harmless strain, one small, virulent strain, and an intermediate one.

Guinea pigs vaccinated with B.C.G. for instance, had occasionally developed tuberculosis, even though apparently free from all contact with the disease and supposedly protected from it by the B.C.G. Dissociation of B.C.G. into a harmless and a harmful strain might account for this. And if it could dissociate in a guinea pig's body, it might likewise dissociate in a baby's.

They decided that the living tubercle bacillus was too uncertain an element to be injected or fed to babies. The only good tubercle bacillus is a dead one, is their contention. And they proceeded to make what they consider a safe vaccine of tubercle bacilli that have been killed by heat. After many experiments with animals, they found they had a vaccine that protected against infection with living tuberculosis germs.

Dead Germs Less Risk

In March, 1929, they said, "We belive that the use of a vaccine of heat killed tubercle bacilli can be put into practical use for the immunization of children."

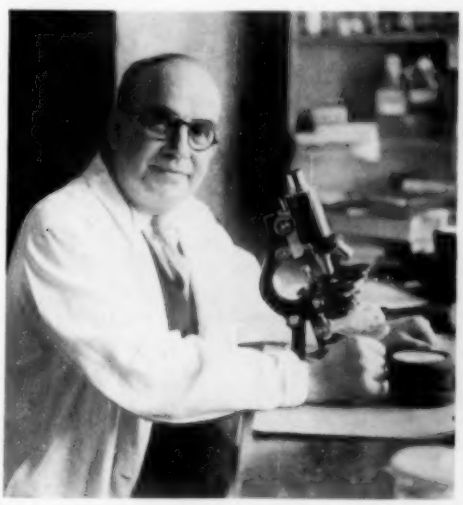
This vaccine has been used for a year now at the Harriet Lane Home, the children's division of Johns Hopkins Hospital. Hopeful results have just been announced by Dr. Edwards A. Park, director of Harriet Lane, and Dr. Francis P. Schwentker, who has made the vaccinations.

It was the Lübeck disaster which inspired these Hopkins investigators to introduce vaccination with dead bacilli. They with the rest of the world had been hopefully watching the B.C.G. experiments, thinking that perhaps here was the long-wanted way to protect babies from tuberculosis, but not yet convinced. Even now, they state, they are not "taking sides." But they are taking no chances of actually giving babies tuberculosis, and the Lübeck affair showed that there was a risk with B.C.G. In this German town, 246 babies were given cultures of living organisms. Seventy-three of the babies died. An official investigation exonerated completely Prof. Calmette's cultures and his method. The disaster was due to contamination of the cultures after they left Prof. Calmette's laboratory, a slip in laboratory technic. Yet it is apparent that the use of B.C.G. is not fool-proof.

In Baltimore, 32 new-born babies of tuberculous families have been vaccinated with Dr. Petroff's vaccine during the last year. Not one of them has developed tuberculosis.

Twenty-one vaccinated babies have gone back into tuberculous homes. In some of them a member of the household has an open case of tuberculosis and is giving off live, virulent tubercle bacilli in his sputum. Ordinarily under such conditions, two out of every three babies develop the disease. Not one of the 21 vaccinated babies has done so.

Science News Letter, June 6, 1931



DISCOVER NEW METHODS OF FIGHTING TUBERCULOSIS

Dr. S. A. Petroff (left) in America vaccinates new born babies with dead tubercle bacilli. Prof. Alfred Calmette (right) in France uses live but weakened germs to protect children of tuberculous parents.

AERONAUTICS

Air Speed Champions to Fly Six Miles High

AIRPLANES capable of flying at heights of over six miles, and capable of much higher speed than existing machines, are being constructed at the famous Junkerswerke at Dessau, Germany. Already the first airplane to be used for research in this work has been constructed with the assistance of the German Institute for Research in Air Communication and the scientific Notgemeinschaft.

The mysterious guns of the German army, bombarding Paris at a distance of 75 miles, were the first practical application of the decidedly lower resistance of the "stratosphere," that tenuous layer of the atmosphere lying above a height of six miles. The chief aim of the new machine is to reach high altitudes and to find paths which can be used as regular airplane trade routes. It is not built for high speed or long flights, since it is regarded as an experimental laboratory for the study of the special conditions prevailing in the stratosphere. High speed can easily be attained at these heights. Recording rockets and balloons have been previously used to explore the stratosphere.

The airplane is a Junkers metal deep-deck, single motored machine of wing breadth 60 feet and weight 9,000 pounds. A small compressor keeps the air pressure normal for the lungs within the cabin, which is double-walled and air-tight. Control of the motor and steering is accomplished by levers in the cabin working in air-tight shafts. The motor itself is of a special type and has an air pump to supply enough air from the thin air at these heights.

On the basis of experiments with this machine a new air pump will be designed for altitudes up to ten miles. A large installation of scientific instruments forms the equipment of the plane.

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PUBLIC HEALTH

Scarlet Fever and Measles Epidemics Reach Peaks

THE EPIDEMICS of scarlet fever and measles which have visited the country have reached their peaks, it appears from reports of state health officers to the U. S. Public Health Service. For the week ended May 23, there were 20,080 cases of measles and 4,727 cases of scarlet fever. This is a drop of about a thousand cases for each disease over the previous week's totals. It is still too early, however, to foresee the end of the epidemics.

The measles epidemic has been general over the entire United States, while the scarlet fever outbreak appears to have occurred largely in the Atlantic and East North Central groups of states. The majority of cases of scarlet fever were reported from Massachusetts, New York, New Jersey, Pennsylvania, Illinois and Michigan.

The scarlet fever outbreak is of particular interest to health officers because this disease has been more prevalent this year than at any time for the last three years. An unusual feature of both epidemics is that they are occurring much later than the usual season for measles and scarlet fever outbreaks. These diseases are usually most prevalent in February, March and April, and generally have reached a low point by this time of the year.

Science News Letter, June 6, 1931

ANTHROPOLOGY

Present Harvard Men Taller Than Ancestors

TAKING THOUGHT may not add one cubit to your stature, but going to Harvard may have some such effect on the stature of your sons. At least, passing through three successive generations of American university life as exemplified at the oldest of American universities has the effect of filtering out and possibly intensifying a tendency for sons to be taller than their fathers and grandsires.

This is indicated by studies announced by a Harvard graduate student in anthropology, Gordon Townsend Bowles, of Tokyo, Japan, who worked under the direction of Prof. E. A. Hooton. Comparing records of the present student generation with those accumulated since 1870, Mr. Bowles was able to check up on heights, weights and other measurements of about two thousand father-son pairs. He found that there is a steady tendency toward greater height and increased width of shoulders, but less girth at the hips. The increases in length of bones seem to come mainly in the middle of the body: in the trunk, thighbones and upper arm bones. There is an increase, but a less notable one, in length of forearm bones and shinbones.

Science News Letter, June 6, 1931

IN SCIENCE

MILITARY SCIENCE

Award Not Made In Mustard Gas Contest

THE PRIZE offered by the International Committee of the Red Cross at Geneva for a reagent to detect small amounts of deadly mustard gas in the air has not been awarded, it has just been announced. The jury of chemists found none of the submitted reagents satisfactory.

According to the terms of the contest, the reagent should have been able to detect with certainty less than one grain of the gas in about one quart of air (0.07 mg in 1 liter). The amount of the prize was 10,000 Swiss francs, about $2,000. The contest closed last December and the jury has since then been considering the reagents submitted with their methods of use. These were known to the jury only by number, the names of the authors being kept separately.

All the methods and reagents were examined in detail. Nine were eliminated at the first examination. The remaining four were made the subject of control experiments. The results were not sufficiently conclusive and the jury decided not to make the award.

Science News Letter, June 6, 1931

GEOLOGY

Souvenir-Hunter Steals 32,000 Year Old Trophy

POLICE are looking for a man who has stolen a stalactite from the famous caves at Wookey Hole, Somerset. If it is not recovered there will be a delay of some 32,000 years before the decorations resume their correct appearance, for the missing stalactite is eight inches long, and it takes, roughly, 1,000 years for a quarter of an inch to grow.

Wookey Hole is probably the most famous and most interesting cavern in Britain, under the Mendip Hills some twenty miles from Bristol. Close by is the "Hyena's Den," where remarkable discoveries of prehistoric animals and men were made many years ago.

Science News Letter, June 6, 1931

NCE FIELDS

METALLURGY

Magnetism Increases Hardness of Metals

THE HARDNESS of steel can be increased by rotating the specimen between the poles of a powerful magnet, E. G. Herbert has discovered at the University of Manchester and reported here to the Royal Society of London.

Steel, duralumin and even brass can show this peculiar behavior.

The process will probably be applied to the hardening of drills, cutters and dies.

Dr. Herbert had shown that previously metals hardened by working can be hardened further by magnetic treatment. He has now shown that age-hardening can be similarly increased by the use of magnetic forces.

Improvement of hardness up to nearly 50 per cent. has been found by this method, the effect being greater at higher temperatures.

Science News Letter, June 6, 1931

MEDICINE

Inoculation Found to be No Cure for Asthma

THAT INOCULATION is no cure for asthma would seem to be one of the conclusions to be drawn from the report of the Asthma Research Council's clinic at Guy's Hospital, London. This verdict is based on the study of more than 200 patients. It has been proved that the disease, which occurs with equal frequency in both sexes, and in which heredity plays an important part, is often associated with eczema, nettle-rash and hay-fever.

The bodily condition in which these diseases tend to occur is termed allergy, and a substance which produces one or another of these manifestations when brought into contact with the patient is called an "allergen." Cheese, eggs, fish and feathers were found to be the commonest offending substances. Unfortunately, in only about three per cent. of patients was relief of the asthma obtained by avoiding an allergen that gave a positive skin reaction, that is to say, which produced a skin weal after scratching as in vaccination.

Asthmatics should avoid boiled milk. Rice, sago, cornflour, semolina, arrow-root, etc., should be boiled in water, and cold milk or cream with sugar or stewed fruit added when served. Powdered glucose administered night and morning on an empty stomach was found to cause a high percentage of improvement in early life.

Although no cure for asthma has yet been discovered, the observation of the occurrence of a complex nitrogenous substance of a proteose character in the kidney secretion of asthmatics holds out hope of progress.

Science News Letter, June 6, 1931

ENGINEERING

New Auto and Plane Fuel Proof Against Matches

A SAFETY fuel for automobiles and airplanes that is as incombustible as Diesel oil and yet as powerful and as productive of engine performance as good aviation gasoline was demonstrated before the sixth annual aircraft engineering research conference of the National Advisory Committee for Aeronautics, at Langley Field, Va.

The new liquid is being tested at the Langley Memorial Aeronautical Laboratory in a special single-cylinder engine. This new fuel, produced by one of the leading oil companies, by means of the new process of hydrogenation, has such a low flash point that a lighted match can be tossed into it without starting a fire.

It is expected to be important in preventing fires that now follow immediately upon crashes of gasoline-engined airplanes. The fuel is not yet on the market.

To use the new kind of fuel it is necessary to replace the conventional carburetor with an injection pump, but the explosive mixture within the engine cylinder is fired by electrical ignition rather than by compression as in the Diesel engine. With this new development it seems probable that the problem of providing future airplanes with less dangerous fuel may be met by an adaptation of present internal combustion engines rather than a complete change to the Diesel type.

The new fuel is yellow in color, contains less sulphur and does not gum as readily as ordinary gasoline.

Science News Letter, June 6, 1931

PSYCHIATRY

Psychoanalyze Children to Prevent Mental Disease

PSYCHOANALYSIS of children offers a greater hope for prevention of mental disease than any other procedure now known, Dr. L. Pierce Clark of New York told the American Psychopathological Association, which met in Boston last week.

Dr. Clark reported that he has used psychoanalysis in studying children who are mentally dull. In the slow minds of some of these children an infantile outlook on life persists, and the ego fails to develop normally, Dr. Clark finds. By psychoanalysis, the child's mental conflicts are traced to their origin, and then the child is set on the road to more normal personality development.

Use of the method with the feebleminded children may prove valuable in providing a better understanding of normal children, the speaker stated, since all children pass through the same processes of mental development. In the feebleminded child some of the very early patterns of personality development may be observed.

That children as well as adults may be treated for mental abnormalities by the psychoanalytic method was suggested by Sigmund Freud, father of psychoanalysis, but the field is still comparatively new and difficult, Dr. Clark said.

"Child analysis is no sure or easy road to prevent the neuroses and psychoses of later life," Dr. Clark warned. "But we do believe that further painstaking effort along these lines will do more toward fostering the preventive work of mental hygiene than any other procedure now available."

Science News Letter, June 6, 1931

PUBLIC HEALTH

Ten Cities Reported Free From Typhoid

TEN CITIES made the typhoid honor roll for 1930, the American Medical Association has reported as a result of its annual survey.

The ten with no deaths from typhoid fever during the year, are Bridgeport, Jacksonville, Kansas City, Kan., New Haven, Paterson, Peoria, South Bend, San Diego, Utica and Worcester.

Science News Letter, June 6, 1931

CHEMISTRY-PHYSICS

Three-Dimensional Molecules

"A Classic Of Science"

Crystals of Organic Compounds May Be "Right-Handed" or "Left-Handed" According to the Way Their Atoms Unite

LA CHIMIE DANS L'ESPACE (*Chemistry in Space*), *by J. H. Van 't Hoff. Rotterdam: P. M. Bazendijk. 1875. Translated for the* SCIENCE NEWS LETTER, *by Helen M. Davis.*

IT IS organic chemistry—the chemistry of carbon—which gave birth to the beautiful theory of atomicity, that allows representation of the molecule as a group of atoms joined together according to certain laws and forming a complete and stable system. It makes use of very simple symbols, indicating at once the qualitative and quantitative composition and the chemical character, symbols which allow us to predict exactly the role which such and such a compound will play under the influence of a certain reaction. It is organic chemistry, I repeat, which has given birth to this theory, it is the same which will give it its growth in precision.

The hypothesis of atomic constitution does not simply give a concise and simple form to observations already made; it is not merely an ingenious notation, but a theory, a generalization, it predicts; that is the mark of its truth.

We may challenge the value of proofs deduced qualitatively, but those which manifest themselves by figures are unexceptionable. What is then the criterion of a true theory? The reply to that question is simple: it is found in the number of possible isomers of a body; thus the atomic theory declares itself rigorously, there its consequences appear confirmed or invalidated.

When we inquire of the facts: *We see that in many cases the number of isomers in existence surpasses that which theory predicts.* We do not dare admit it; we hide it under the terms, physical or geometrical isomerism; we have recourse to the biatomicity of carbon; we close the chain of its atoms; but the truth is that: *Present theory is unable to predict isomers exactly.*

One who is guided by an hypothesis based on numerical principles exclusively, and judging everything with impartiality, arrives at contradictory facts. One who, on the other hand, has the prudence to remain undecided on certain questions, will be able to use those facts, with which his predecessor has come into conflict, to develop a new theory to rescue the old one from something apparently fatal to its success.

In a brochure which was prepared in Holland, I made an attempt at a theory of structural formulas in space; I called for discussion of my ideas; I wished to profit by the results.

I was given the honor of inserting a French translation in the Netherlands Archives, but for what I so much desired, an opinion, a discussion, I have waited in vain. Every new hypothesis, if I may be permitted so to speak of this, ought to pass through two distinct phases; it ought first to show whether it presents in its interpretation of known facts any advantage over those which already exist; then, if it has received this support, it is still necessary that experiment show the truth of its predictions. It is in the first phase that the judgment of scientists is so desirable. I have not found it in Holland.

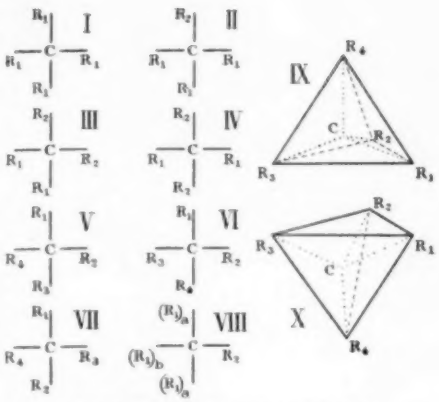
At the same time, M. Le Bel has come out in favor of a part of my theory at the meeting of the Chemical Society of Paris, November 5, 1874, and at that of March 19 of this year M. Berthelot was willing to present some remarks upon our ideas; I seized this occasion to beg the eminent chemist to accept the expression of my lively gratitude.

It appears therefore that the moment has come to present my theory with the development which it has since received and to ask a judgment from foreign scientists.

Rotterdam
May, 1875.

Discussion of the Theory

The present theory has two weak points; it does not take a stand on the matter of determining what relative position the atoms occupy in the molecule, nor upon their motion.



STRUCTURAL FORMULAS

As conveniently drawn in one plane, and as Van 't Hoff believed they exist in three-dimensional space. The tetrahedra represent the central carbon atom, the R's represent groups of organic radicles. The two figures are mirror images of each other.

As a result of this, doubt still covers all questions of static or dynamic chemistry; rational progress tells us that it will be necessary in the beginning to work in the first direction. There is always the objection that each motion changes the form of the system which we are trying to fix. But the motion of the atoms in the molecule must be periodic[1]; we can therefore show the relative position of the atoms in one phase of their motion.

It is evident that the result of such a conception is incomplete. A very small unforeseen difference, which could be due to a modification of vibratory motion passing through one phase, might cause isomerism unexplainable by a static formula. Thus it would be important not to ascribe to a difference in constitution something which would be effaced by the mode of motion; we would however meet it again at the same point in time and space. My way of reckoning indicates then a minimum, not a maximum of cases of isomerism.

A primary reason has already frequently made us realize the insufficiency of present formulas: they represent in one plane the molecule which has three dimensions. One might say that a sys-

[1] If the kind of molecule is a function of the motion of the atoms we cannot have equality in the one without periodicity in the other.

tem drawn in a plane acquires three dimensions by moving, but this objection is merely specious. I propose to show that in considering only atoms in one plane we arrive at results in contradiction to the facts; it is necessary therefore to change at least for the chemistry of carbon.

Let us consult the simplest graphic method, that which leads to the lowest number of isomers: Let us represent the four affinities of each carbon atom by four lines, drawn in a plane, perpendicular to each other; let them be R_1, R_2, etc., of monatomic groups:

Then a compound of the formula $C(R_1)_4$ would be represented by fig. 1, and would not admit of isomers; it is the same with the class of compounds shown by the formula $C(R_1)_3 R_2$ (fig. 2);

But $C(R_1)_2 (R_2)_2$ and $C(R_1)_2 R_2 R_3$ allow each two images (fig. 3 and 4) of two isomers;

Likewise with the formula $C(R_1 R_2 R_3 R_4)$ we can construct three symbols, shown in figs. 5, 6 and 7.

In summation, we have a number of isomers resulting from the simplest hypothesis, concerning the development of formulas in one plane; the number is evidently much greater than those known at the present time; every other attempt would give more of them.

Second drawback: Let us take the formula $C(R_1)_3 R_2$ represented by fig. 8; it is evident that the group R_1, shown by $(R_1)_b$ ought to have different properties from that indicated by $(R_1)_a$: that is to say that in a compound such as methyl chloride one with three atoms of hydrogen ought to have a special character; yet the result does not justify it; let us then leave these formulas to look at those which result when we consider them in space.

In imagining the affinities of the carbon atom, directed toward the apexes of a tetrahedron, whose center would be occupied by the atom itself, theory is in accord with fact. Indeed no one has ever caught a hint of the existence of isomers for the compounds represented by the formulas $C(R_1)_4$, $C(R_1)_3 R_2$, $C(R_1)_2 (R_2)_2$ and $C(R_1)_2 R_2 R_3$; only in the formula $C(R_1 R_2 R_3 R_4)$ one case of isomerism appears; it exhibits the difference of figs. 9 and 10; in fact if one supposes himself standing on the line $R_1 R_3$, his head at R_1, looking at $R_2 R_4$, R_2 would be turned to the right (fig. 9) or to the left (fig. 10) of the spectator, in other words: *In the case where the four affinities of the carbon atom are satisfied by four groups different from one another, we can have two and only two different tetrahedra, which are mirror images one of the other, and can never doubt this idea, namely, that we are dealing with two formulas isomeric in space.*

The Asymmetric Carbon Atom

The main result of our hypothesis has been to predict many isomers, which present theory cannot do, in connection with compounds containing one or more asymmetric carbon atoms.

Indeed it can predict that isomerism which, as we have seen, does not appear in any striking difference in chemical properties; there is indeed great similarity in reactions, so that it is known in general under the name of physical or geometric isomerism.

It is evident that differences will be discovered the more readily the greater they are; so that descriptions of isomerism or the identity of such bodies are still very new.

The work of M. Wislicenus on the lactic acids has interested me very much, also the discussion between his pupils MM. Friedel and Langermarck over the existence of two or three ethylene iodobromides. Here we are dealing actually with compounds containing asymmetric carbon atoms:

$CH_3.CH(OH)\ CO_2H$ and $CH\ Br\ I\ CH_3$

Although the chemical properties of the isomers in question resemble one another so much, they have not the same physical properties. The way in which these bodies behave in respect to polarized light interests me especially; I have indeed recently reached the following conclusion:

Every carbon compound, which in solution effects a deviation in the plane of polarization, possesses an asymmetric carbon atom.

I have concluded that we find here a proof in support of my hypothesis, for the rotary power which bodies in solution possess arises from the kind of molecule, and not from a special grouping of them; so the differences in this property ought to relate to those in the construction of the molecule.

Science News Letter, June 6, 1931

THE BIRD THAT IS MOSTLY BEAK

The Toucan

—native to the American Tropics, naturally created interest in the early post-Columbian century. His write-up in

Historia Animalium

by CONRAD GESNER

will be the

NEXT WEEK'S CLASSIC OF SCIENCE

ENGINEERING

Government Tests Show That Gasoline Dopes Are Useless

GASOLINE dopes sold to be added to motor fuel were found in an extensive series of U. S. Bureau of Standards tests to be valueless in improving any feature of engine performance.

Conclusions drawn by Dr. H. C. Dickinson, chief of the division of heat and power, show that such dopes, exclusive of well-known knock suppressors which are sold mixed with the gasoline, cannot be expected to improve starting, decrease crankcase dilution, or prevent vapor lock. Some 150 dopes were tested.

"As the result of the normal failure to reach perfection," Dr. Dickinson explained in a report to the American Chemical Society, "the motor vehicle offers a new field for the former dopesters of human ills. In fact, the psychological factors which have played such a large part in the distribution of drugs and medicines are equally potent in their effect on the marketing of fuel dopes.

"The starting characteristics of a fuel cannot be revolutionized by the addition of any foreign material in amounts much less than one per cent. The completeness of evaporation also, like the ability to start, is controlled by the general volatility of the gasoline and cannot be appreciably affected by the addition of material in small amounts.

"Vapor lock or the stoppage of the engine due to interference with the normal fuel feed has been increased re-

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cently by the high initial vapor pressure of cracked and natural-gas gasolines. No dope has been proposed to remedy this fault."

With regard to knock prevention, Dr. Dickinson said that some of the antidetonants are essentially fuel improvers. Among these the best known are iron and nickel carbonyls and organic compounds of lead, selenium and tellurium. Tetraethyl lead, the anti-knock agent that has found general application, is sold only mixed with gasoline.

Science News Letter, June 6, 1931

AERONAUTICS

Scientists Fortunate to Return From Region of Black Skies

PROF. Auguste Piccard and Dr. Charles Kipfer, whose balloon rose to a height reported to be over 50,000 feet on May 28, have been more fortunate as well as more successful than previous balloonists, many of whom have been martyrs to the conquest of the atmosphere.

The record balloon ascent in November, 1927, by Capt. Hawthorne C. Gray of the U. S. Army ended fatally for him. After several previous narrow escapes, Capt. Gray reached 43,000 feet but, accidentally cutting his oxygen tube, died from suffocation before reaching the ground at Sparta, Tenn. On a previous ascent he lost consciousness only to find himself falling at about a thousand feet per minute. Throwing ballast overboard frantically he fortunately landed on some telegraph wires without harm. On another occasion he had to use a parachute to save his life.

The record for heavier-than-air machines is about the same figure. A height of 43,168 feet was reached by Lieut. Apollo Soucek of the U. S. Navy.

A new method for finding high altitudes and a record for two men was the outcome of a more recent and fortunate flight with an airplane, piloted by Capt. St. Clair Street of the Army Air Corps. Photographs of Dayton, Ohio, were taken from this machine by Capt. Albert W. Stevens at a height of 40,000 feet.

Lightning Hazard

Lightning, another hazard of high flying balloons that depend on inflammable hydrogen instead of the helium such as used in the airship Los Angeles, caused the deaths of Dr. C. L. Meisinger of the U. S. Weather Bureau and Lieut. J. T. Neeley of the Army Air Service in 1924 over central Illinois. In making a series of balloon flights to learn the behavior of storms at great heights, Dr. Meisinger and Lieut. Neeley were finally the victims of a thunderstorm that set fire to their balloon, an accident they had feared but luckily escaped in previous ascents.

The height reached by the Piccard balloon is only half as great as the 20 miles reached by small unmanned balloons.

There is some doubt as to whether anything of value will be added to our knowledge of cosmic rays as a result of the flight. In 1922 Dr. Robert A. Millikan and Dr. I. S. Bowen of the California Institute of Technology sent their cosmic ray electroscopes to a height of nearly ten miles, slightly higher than the reported Piccard record.

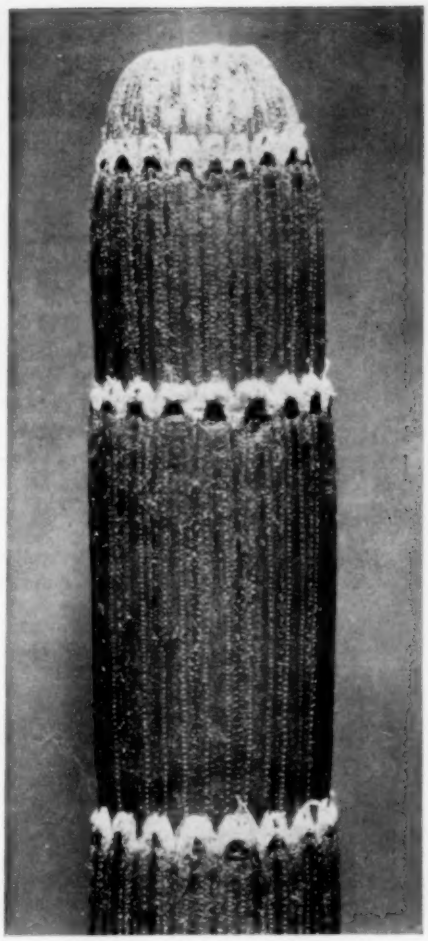
Dr. W. J. Humphreys of the U. S. Weather Bureau stated that the two scientists, imprisoned within their aluminum globe, could hardly expect to observe anything by means of the instruments fastened to the outside that has not already been made known by registering apparatus sent aloft on free balloons that have ascended to much greater heights than that reached by the German bag.

In reaching their record-breaking height, the two venturers passed through all the weather there is, for all clouds, as well as the highest winds, are found below the ten-mile level that marks the top of the "troposphere," or region of really active air. Above this, in the "stratosphere," the sun shines brightly in a black sky, the winds are constant but moderate, and the temperature drops to a level of about 70 degrees below zero Fahrenheit at the 50,000-foot mark.

The Piccard ascension was the first balloon flight in which a sealed cabin has been used.

Experts believe that the stratosphere explored by the aluminum globe offers the best hope for fast-flying airplanes as the resistance of the air at these heights is very small.

Science News Letter, June 6, 1931



NATURE'S OWN SKYSCRAPER

When the designers of some new "topless tower" of a modern Ilium cast about for ultra-modern suggestions in design and proportion, they might do worse than to hark back some scores of millions of years, to a design perfected in the days when coal was a-making. The growing tip of the common scouring-rush, or horsetail, that besets dunes, wayside ditches, railroad embankments and similar places, has something about it that fits very well into the modern scheme of beauty, yet without doing violence to classical standards. Like all successful designs in nature, its beauty is timeless. The photo-enlargement is by Cornelia Clarke.

AERONAUTICS

Rock of Gibraltar Modeled To Study Air Currents

SCIENTISTS at the National Physical Laboratory, near London, have made a model of the Rock of Gibraltar in order to determine the distribution of the wind currents in the neighborhood. Information obtained in this way will be of great importance to pilots flying in the vicinity of the famous fortress.

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Volume V, 1930

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ARCHAEOLOGY

Choice Prehistoric Apartment Discovered by Archaeologists

EVEN IN the days when the aborigines of the West lived in rock shelters, there were desirable apartments and others not so good. One of the more desirable cliffside apartments, occupied continuously for a long, long time, has been discovered by Dr. E. B. Renaud, of the University of Denver.

Dr. Renaud and three associates from the university discovered the shelter in Turkey Creek Canyon, about 32 miles south of Colorado Springs.

The gray sandstone arch which formed the cliff shelter had a western exposure to the sun, and for outlook there was a grassy stretch and a creek of fine clear water beyond. Neighboring cliffs cut off the wind. Trees and bushes provided shade and firewood and privacy. A location not apt to be found by marauding tribes was a good selling point for a home in prehistoric America.

That the shelter was practically never unoccupied is deduced by Dr. Renaud from his excavations inside. These revealed a very large hearth in which ashes and fragments of charcoal formed a deep layer. Had the site been left uninhabited at intervals, this campfire material would have alternated with layers of sterile earth.

Grinding troughs, well worn from use, were found on a rocky bench in the shelter. On the wall of the apartment were pictures which the occupants had painted in red. Dr. Renaud identified figures of three deer and a large wild turkey, also a strange design of scallops and bands.

"The unexpected depth and extension of the fireplace render this site, already made interesting by its rare painted pictographs, very important," Dr. Renaud stated. "For there are extremely few rock shelters in eastern Colorado, and none, so far, is known to have such a deep accumulation with evident remains of human activity."

Science News Letter, June 6, 1931

BACTERIOLOGY

Sea Salt is Cause of Red Stain on Hides

LARGE areas of brick-red discoloration which sometimes occur on hides have been traced to the use of sea salt for curing the hides. The color is due to immense numbers of red bacteria similar to those found fairly often on salted fish. The bacteria can stand remarkably high concentrations of salt.

Miss Madge E. Robertson, of the laboratories of the British Leather Manufacturers' Research Association, has found that the ordinary bacteria of dust and dirt cannot produce the red stains.

Science News Letter, June 6, 1931

BOTANY

Nature Ramblings

By FRANK THONE

Catalpa Trees

ON THESE warm days the grass beneath the catalpa trees is white as with snow—only the snow in this case is made of the scattered fallen flowers. The great clusters of snowy bloom, the huge broad leaves, and the long, green seed-pods that come later, all give this tree something of a tropical aspect, and make it seem a trifle out of place among the soberer elms and oaks and maples. And in a sense it is, too, for though it is a native species, its kin, like the trumpet creeper and the bignonia or cross-vine, are tropical or subtropical in origin.

Its long, slender seed-pods, after they ripen and turn brown and dry, are familiar to boys as "Indian cigars" or "smoking beans"; and indeed the tree often bears one of these names itself. Both the pods and the bark are listed as having medicinal properties, though they are little used.

Besides its great beauty as an ornamental, the catalpa has great usefulness as a fence-post producer. That is, if one gets the right kind. There are two principal species of catalpa. One, the hardy catalpa, grows rapidly and yields small timbers that last well and do not split. The other, the soft catalpa, grows even more rapidly, but often splits even while it grows, and rots out easily when set in the ground. It is somewhat difficult to tell the two apart. However, the pods of the hardy catalpa are much the smaller of the two, being seldom either longer or thicker than a lead pencil; whereas those of the soft species are huge affairs, frequently reaching a length of two feet and a thickness as great as a man's little finger. The bark of the hardy catalpa also is a mark, being much thinner than that of the soft.

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MEDICINE

Only One-Fourth of Hay Fever Patients May Expect Cure

TINY GRAINS of pollen from early-blossoming trees are sending the first of the season's hay fever sufferers to their physicians for treatment. One-fourth of them can look forward to nplete relief by the desensitization treatment, while a varying number more will be definitely benefited.

The first step in hay fever treatment is to determine what plant or tree pollen or animal or food protein causes the trouble in the individual case. Some persons are sensitive to more than one such irritant. When the offending pollen and other proteins are discovered, they are injected in tiny but gradually increasing amounts until finally the system has become desensitized to them and can tolerate the amounts usually present in the air.

An English scientist, John Freeman, director of the department of clinical bacteriology at St. Mary's Hospital, London, devised a new and speedy method of treating these unfortunates which he called, appropriately, "rush" desensitization. The method is essentially the same as other methods of hay fever treatment except for its speed. Instead of giving the patient a treatment once a week for several weeks, Mr. Freeman gives them one every one and one-half or two hours throughout a 14-day period. The patient either goes into a hospital or has a trained nurse at home who can give the treatments and watch his condition carefully.

Sanitorium Treatment

Another method recently found helpful in treating patients with hay fever, asthma and similar conditions is the sanitorium treatment. Dr. Zella White Stewart of Iowa City, Iowa, reported to the Association for the Study of Allergy that when patients are removed to a sanitorium, diagnosis is easier, treatment more sure, and education of the patient more successful.

In a sanitorium, for instance, it is possible to remove many of the common causes of sensitiveness and thus enable the remainder to be identified more easily. All wool, hair and feathers are avoided, for example. Precautions against the intrusion of pollen may be taken in season according to the location of the sanitorium. Thus all common causes except foods are eliminated and the importance of these can be readily decided by a study of the patient in these ideal surroundings.

Some persons get hay fever from protein in foods, animal hair or feathers, glue, horn-rimmed glasses, molds, dust, and many other queer sources besides plant and tree pollens.

Tree pollens are responsible for about six per cent. of hay fever sufferers, Dr. Harry S. Bernton, professor of hygiene and preventive medicine at Georgetown University Medical School, Washington, found. Of this six per cent., over half owe their hay fever to varieties of oak trees, with hickory and sycamore following closely. These observations were made in the District of Columbia but are representative of the situation in the eastern part of the United States as well, Dr. Bernton said.

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• First Glances at New Books

Public Health

DANGEROUS DRUGS—Arthur Woods—*Yale University Press,* 123 p., $2. A clear and stirring discussion of the narcotic drug problem by one whose experience as Police Commissioner in New York City and as assessor to the Advisory Committee on Traffic in Opium and Other Dangerous Drugs of the League of Nations has given him first-hand knowledge of the situation. The book will have a general appeal because of the interest in the subject matter, but there is also a special appeal to the thoughtful reader in the final chapter which tells what is to be done.

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Psychology

AMERICAN TYPES — James Oppenheim—210 p., $2.50. A novelist who has turned to psychoanalysis attempts the rather large task of psychoanalysing a nation, or as he says a "race." It is entertaining to see how he sorts prominent people into types—President Hoover and Aimee Semple McPherson, Jane Addams and Lillian Gish; each one is given a cubbyhole.

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Hygiene

HEALTH STORIES AND PRACTICE—William E. Burkard, Raymond L. Chambers and Frederick W. Maroney—*Lyons and Carnahan,* 256 p., 76c. A health reader for third grade. It is made up of stories illustrating health habits or facts. Following each story is a list of health habits, a list of things to remember, and a list of things to do, which summarize and emphasize the lesson of the preceding story. Illustrations are in color.

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Horticulture

NUT GROWING—Robert T. Morris—*Macmillan,* 236 p., 18 pl., $2.50. A second and revised edition of a much-needed work on an industry well-developed in some parts of the country and for certain species, but worth further developing.

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General Information

AMERICAN YEARBOOK—Edited by A. B. Hart and W. M. Schuyler with the cooperation of a supervisory board representing national learned societies—*American Year Book Corporation,* 887 p., $7.50. A valuable concise record of the year's events set forth in readable, readily accessible form. The Yearbook for 1930 contains, in addition to an account of the history of the period, a full account of the organization and conduct of the business of the country and of scientific, social and educational progress in America in 1930.

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Biology

THE SCIENCE OF LIFE—H. G. Wells, Julian S. Huxley and G. P. Wells—*Doubleday Doran,* 1514 p., (2 vols.), $10. This work, which undertakes to give a conspectus of all living things, both existent and extinct, is conceived with a characteristic Wellsian sweep and presented with Wellsian authority. Unfortunately, however, the treatment is somewhat uneven. Intended to be popular, the discussion frequently becomes noticeably "textbooky;" the illustrations of this, the American edition, moreover, are not up to the mark set by the English edition.

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Construction

CARE AND REPAIR OF THE HOUSE—Vincent B. Phelan—*Government Printing Office,* 121 p., 20c. Anyone who likes to or has to work around the house upon odd jobs will wish to keep a copy of this Bureau of Standards booklet in his tool chest. It will save many dollars for those who have the responsibility of keeping a house in repair even if they do not do their own work.

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Psychology

INTELLIGENCE TESTING — Rudolph Pintner—*Holt,* 555 p., $2.40. A new and revised edition of a comprehensive work on the methods, results and history of making and using mental tests.

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Geophysics

THE FIGURE OF THE EARTH—*National Research Council,* 286 p., $3.50. Leading men in several branches of geophysics have prepared this monograph, which constitutes Bulletin No. 78 of the National Research Council. Tidal theory and computations, earth tides, isostasy, the size and shape of the earth, determination of "g", the determination of elevations and geographic positions, and the variation of latitude are among the problems dealt with.

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Astronomy

THE STARS IN THEIR COURSES—Sir James Jeans—*Macmillan,* 173 p., $2.50. The latest book by this leading British astronomer who has just visited America provides a fascinating introduction to astronomy. It is not the sort of book to take out under the summer night sky as a guide to star gazing, but if you read it and then view the splendors of the sky you will appreciate them much more.

Science News Letter, June 6, 1931

Morphology

THE PHYSICAL BASIS OF PERSONALITY—Charles R. Stockard—*Norton,* 320 p., $3.50. This interesting and remarkable book will explain to the ordinary man such puzzling things as genes and chromosomes, why he looks the way he does, and what his looks signify in terms of personality and character. The book is noteworthy because the author contrives an interesting and very readable account of a difficult scientific subject without jazzing the facts or resorting to the usual style tricks of most popular science writers.

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General Information

AMERICAN AGENCIES CONCERNED WITH INTERNATIONAL AFFAIRS—Compiled by Ruth Savord, Librarian—*Council on Foreign Relations, Inc.,* 138 p., $1.75. A useful directory of organizations engaged in promoting a better knowledge of world affairs. The list is large and revealing.

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Zoology

COLLEGE ZOOLOGY—R. W. Hegner—*Macmillan,* 713 p., $3.50; LABORATORY GUIDE FOR COLLEGE ZOOLOGY—R. W. Hegner—75 p., $1. Hegner's text, standard since 1912, appears in a third, completely revised edition. A new chapter, on genetics and heredity, together with a glossary, have been added.

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Dendrology-History

NOTABLE TREES OF VIRGINIA—J. E. Lodewick and Mrs. Lynwood R. Holmes—*Virginia Polytechnic Institute,* 24 p. Photographs and brief accounts of trees and groves in Virginia made famous through events in two great wars and many years of peace.

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